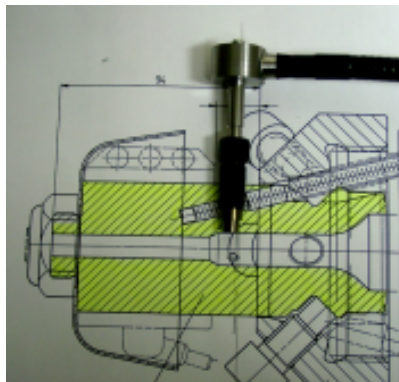# Operating Instructions

Nozzle Temperature Sensor
NTS 2 - IR - A2

Fast infrared temperature sensor for measuring the melt temperature in the nozzle of an injection molding machine

FOS Messtechnik GmbH
Germany

Rütgersstrasse 40
D-24790 Schacht-Audorf

www.fos-messtechnik.de

Telefon: +49 4331 9065
Telefax: +49 4331 9066

Installation of the sensor

The FOS NTS 2 - IR - A2 sensor is a fast infrared thermometer for measuring the melt temperature in the nozzle of an injection moulding machine. The measuring of the infrared radiation of the melt is the only method to detect the exact temperature in milliseconds so that too high or too low temperatures of the melt can effectively be avoided.

Installation of the sensor:

1. Mount the sensor into the measuring bore hole. **Please make shure that the sensor and the amplifier show identical serial numbers !**

2. Connect a 24 V DC power supply to the amplifier and the green LED will start shining.

3. The sensor is now ready for operation !

Zero and Span Adjustment:

Attention: The factory calibration of the sensor was done by means of a grey infrared radiator. The actual sensor-IR-output and the sensor head temperature output signal (TC = Thermocouple) can be found on the amplifier label.

Start condition:

Make shure that the sensor (IR-output) shows approximately room temperature when the sensor head is cold. If not use the zero adjustment screw. (Try to get 25 - 30 °C read out = 625 - 750 mV).

Nozzle filled with plastic melt, nozzle at operating temperature.
Now the IR signal should show the same temperature as the nozzle body. The difference of the readings can be ajusted by means of the span screw at the backpanel of the amplifier.

Now the sensor is ready for operation !!

Technical Data:

Principal of function:	A fast infrared thermometer for measuring the melt temperature in the nozzle of an injection moulding machine.
Supply Voltage:	24 VDC (+/- 10%) (max. 300 mA)
Output signals:	
Infrared thermometer:	25 mV / °C
Conventional thermometer:	10 mV / °C
Linearity:	better than 1% FSO
Precision:	better than 1% FSO
Temperature range:	50 °C - 400 °C
Response time:	typ. 15 ms

FOS

MESSTECHNIK GMBH

Connecting cable

Material PVC, color grey, Ø 7,4 mm, 6-wires twisted pairs with overall screen

Pin connecting list of the Weidmüller plug for the Infrared nozzle thermometer Type NTS 2 -IR -A2

Pin		Color	Signal
[1]	Temp. TC	---- Green -------	Temperature output: 10 mV/°C
[2]	Temp. IR	---- White --------	IR-Temperature output: 25 mV/°C
[3]	Temp. IR	-- Brown/Yellow -	GND to Pin [1] u. [2]
[4]	Reserved	-------------------	NC
[5]	Reserved	-------------------	NC
[6]	Reserved	-------------------	NC
[7]	Reserved	-------------------	NC
[8]	Reserved	-------------------	NC
[9]	Reserved	-------------------	NC
[10]	+ 24 VDC	---- Pink -------	+ 24 VDC
[11]	GND	---- Grey -------	GND
[12]	PE	-- Green-Yellow -	PE

Connecting scheme

Anschußbelegung Connecting scheme
IR-Temperatur-Sensor MTS 408 mit Netzgerät NG SPS 24
IR-Temperature-Sensor MTS 408 with Power supply NG SPS 24

Meßverstärker / Amplifier MTS 408:

Steckerleiste / Header:
Klemmleiste steckbar / Plug in terminal blocks :

Weidmüller SL 5.08/12/90B 3.2 SN OR
Weidmüller BLZ 5.08/12B SN OR

Netzgerät / Power supply NG SPS 24:

Steckerleiste / Header:
Klemmleiste steckbar / Plug in terminal blocks:

Weidmüller SL 5.08/8/90B 3.2 SN OR
Weidmüller BLZ 5.08/8B SN OR

Anschlußkabel / Connecting cable:

Material PVC, Farbe grau, Ø 7,4 mm, 6-adrig paarig verseilt mit Gesamtschirm
Material PVC, colour grey, Ø 7,4 mm, 6 wires twisted pairs with overall screen

Meßverstärker / Amplifier MTS 408:
Netzgerät / Power supply NG SPS 24:

Klemmleiste steckbar / Plug in terminal blocks :
Klemmleiste steckbar / Plug in terminal blocks:

Weidmüller BLZ 5.08/12B SN OR
Weidmüller BLZ 5.08/8B SN OR

NTS 2-IR-A2-amplifier

Span   Zero   Power

[1] Temp. TC
[2] Temp. IR
[3] GND
[4] Reserved
[5] Reserved
[6] Reserved
[7] Reserved
[8] Reserved
[9] Reserved
[10] + 24 VDC
[11] GND
[12] PE

green
white
yellow/brown
pink
grey
yellow-green

Connecting cable

white
green
yellow / brown
pink
grey
yellow-green

NG SPS 24
24 V DC power supply

Input 1 [16]
Input 2 [15]
PE [14]
NC [13]
GND [12]
+24 VDC [11]
GND [10]
PE [9]

[1] Output 1
[2] GND
[3] Output 2
[4] Gnd
[5] NC
[6] 230 VAC
[7] 230 VAC
[8] PE

Signal
GND
Signal
GND

Output Temp. IR
Output Temp. TC
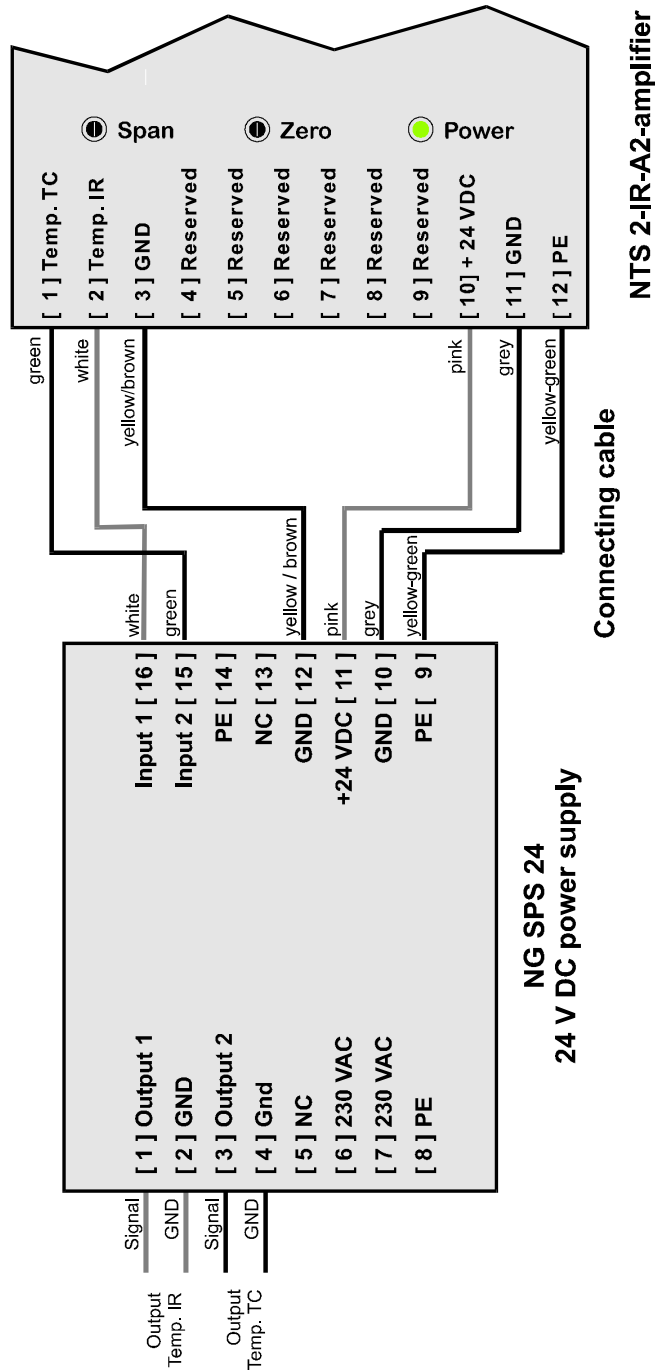
Connecting scheme for IR-Temperatur-Sensor NTS 2 - IR - A2

Amplifier NTS 2 - IR - A2:   12-pin inline connector: Weidmüller SL 5.08/12/90B 3.2 SN OR

Standard cabell for Infrared thermometer NTS 2 - IR -A2:   Material PVC, color grey, Ø 7,4 mm, 6-wires twisted pairs with overall screen

Plug with cable on the sensor side: Weidmüller BLZ 5.08/12B SN OR

Kabel: 6-adrig, paarweise verdrillt, 0,34 mm², Gesamtschirm

yellow-green | grey | pink   yellow/brown | white | green

PE [12]	
GND [11]	
+24 VDC [10]	
Reserved [9]	
Reserved [8]	
Reserved [7]	
Reserved [6]	
Reserved [5]	
Reserved [4]	
GND [3]	
Temp. IR [V] [2]	
Temp. TC[V] [1]	

Power ●   **Zero** ◉   **Span** ◉

Power Supply : 24 VDC
Max. Operating Pressure : 3500 bar
TC Temperature Output : 10 mV/°C
IR Temperature Output : 0 - 10 V
Temperature Range : 30 - 400 °C

Type NTS 2 - IR - A2   SN XXXXX

IR Nozzle
Temperature
Sensor

The inventors
of the optical
pressure sensor

FOS

MESSTECHNIK GMBH

Rütgersstraße 40
D-24790 Schacht-Audorf
Phone +49 4331 9065
Fax +49 4331 9066